1.1 Computational Methods in Models with Stochastic Volatility

Room: Fulton 115
Organizers: *Filippo Altissimo* and *Fabio Fornari* – Bank of Italy
Chairperson: *Antonio Mele* – THEMA

NONPARAMETRIC ESTIMATION OF MULTIFACTOR CONTINUOUS TIME INTEREST-RATE MODELS
Christopher T. Downing – Board of Governors, Federal Reserve

STOCHASTIC VOLATILITY: UNIVARIATE AND MULTIVARIATE EXTENSIONS
Eric Jacquier – Boston College, *Nicholas G. Polson*, and *Peter Rossi* – University of Chicago

ARCH MODELS AND OPTION PRICING: THE CONTINUOUS-TIME CONNECTION
Antonio Mele – THEMA and *Fabio Fornari* – Bank of Italy

1.2 Games I

Room: Fulton 117
Chairperson: *Jane M. Binner* – Nottingham Business School

LEARNING TO TRUST: UNCOVERING UNOBSERVED MULTI-PERIOD BEHAVIORAL STRATEGIES FROM OBSERVED STAGE GAME ACTIONS USING FINITE AUTOMATA
Jim Warnick – University of Pittsburgh and *Robert L. Slonim* – Case Western Reserve University

MOVING-HORIZON CONTROL IN DYNAMIC GAMES
W.A. van den Broek – Tilburg University

LEARNING SCHEMES IN EVOLUTIONARY GAME THEORY: APPLICATION TO A MODEL OF ENTRY IN A REGULATED MARKET
Iqbal Adjali, *A. A. Reeder*, *David Collings*, *M. H. Lyons*, and *A. Varley* – BT Laboratories

THE USE OF QUALITATIVE RESEARCH TO DEVELOP A COMPUTATIONAL MODEL FOR DYNAMIC ENTRY DETERRENCE IN AN EMERGING MARKET
Jane M. Binner – Nottingham Business School, *C. B. Lee*, *W. D. Murphy* – University of Derby, and *L. R. Fletcher* – University of Salford

1.3 Financial Econometrics I

Room: Fulton 145
Chairperson: *Dietmar P. J. Leisen* – Stanford University

FINITE ELEMENT METHODS IN BOND AND OPTION PRICING
Juergen Topper – Arthur Andersen and University of Hannover

PERFORMANCE OF A HEDGED DYNAMIC PORTFOLIO MODEL IN THE PRESENCE OF EXTREME EVENTS
Rosella Giacometti – Università di Bergamo and *Rosella Castellano* – Università di Macerata

INFINITE-HORIZON OPTIMAL HEDGING UNDER CONE CONSTRAINTS
Keven Xiaodong Huang – Utah State University

VALUATION OF BARRIER OPTIONS IN A BLACK-SCHOLES SETUP WITH JUMP RISK
Dietmar P. J. Leisen – Stanford University and University of Bonn

1.4 Stochastic Simulation in Rational Expectations

Room: Fulton 150
Organizers: *Michel Juillard* – University Paris VIII and CEPREMAP and *Douglas Laxton* – International Monetary Fund
Chairperson: *Michel Juillard* – University Paris VIII and CEPREMAP

AN ANALYSIS OF THE ROBUSTNESS OF SIMPLE MONETARY POLICY RULES IN SIMPLE MODELS OF THE OUTPUT-INFLATION PROCESS
Douglas Laxton – International Monetary Fund

IS IT WORTH REDUCING EXCLUSION?
Fabrice Collard – CEPREMAP, *Patrick Fève* – Nantes University and CEPREMAP, and *François Langot* – University of Le Mans and CEPREMAP

MATHEMATICAL AND NUMERICAL ANALYSIS OF A TYPE OF MONETARY MODEL
Jenny Li – Pennsylvania State University

STOCHASTIC SIMULATIONS OF A NON-LINEAR PHILLIPS CURVE MODEL
Michel Juillard – University Paris VIII and CEPREMAP and *Fabrice Collard* – CEPREMAP

1.5 Modeling

Room: Fulton 235
Chairperson: *Sunanda Roy* – University of Southern California

A PRIMAL-DUAL DECOMPOSITION-BASED INTERIOR-POINT APPROACH TO TWO-STAGE STOCHASTIC PROGRAMMING
Arjan B. Berkelaar, *K.P. Bart Oldenkamp* – Erasmus University, and *Cees L. Dert* – Free University of Amsterdam

MODELING THE ECONOMICS OF INTERNET COMPANIES
Deniz Yuret – Massachusetts Institute of Technology, *Ayla Ogus* – Boston College, and *Michael de la Maza* – Redfire Capital Management Group

SOLVING LARGE AND SMALL MODELS ON MICROCOMPUTERS
Jean-Louis Brillet – INSEE

GOVERNMENT-PRIVATE OWNERSHIP EQUILIBRIUM WITH INCOMPLETE MARKETS
Sunanda Roy – University of Southern California

2.1   The Computational Complexity of Markets

Room: Fulton 115
Organizers: *Nienke Oomes* – University of Wisconsin and *Koye Somefun* – University of Notre Dame
Chairperson: *Blake Le Baron* – Brandeis University

THE COMPLEXITY OF EXCHANGE
Rob Axtell – Brookings Institution and Santa Fe Institute

MARKETS AS COMPLEX DISTRIBUTED NETWORKS: IMPLICATIONS FOR EFFICIENCY AND INEQUALITY
Nienke Oomes – University of Wisconsin

TOWARDS AN AUTOMATA APPROACH OF (INSTITUTIONAL) ECONOMICS
Koye Somefun and *Philip Mirowski* – University of Notre Dame

2.2   Bounded Rationality, Learning and Asset Prices

Room: Fulton 117
Organizers: *Emilio Barucci* – University of Florence and *Volker Wieland* – Federal Reserve Board
Chairperson: *James Bullard* – Federal Reserve Bank of St. Louis

LEARNING WITH BOUNDED MEMORY IN STOCHASTIC MODELS
Kaushik Mitra and *Seppo Honkapohja* – University of Helsinki

HETEROGENEOUS EXPECTATIONS, MARKET DYNAMICS, AND SOCIAL WELFARE
SaangJoon Baak – International University of Japan

HETEROGENEOUS BELIEFS, RISK AND LEARNING IN A SIMPLE ASSET-PRICING MODEL
Xue-Zhong He and *Carl Chiarella* – University of Technology, Sydney

LEARNING AND EXCESS VOLATILITY
James Bullard – Federal Reserve Bank of St. Louis and *John Duffy* – University of Pittsburgh

2.3   Dynamic Optimization

Room: Fulton 145
Organizers: *Emilio Cerda* and *Francisco Alvarez* – Universidad Complutense de Madrid
Chairperson: *Jorge Soares* – George Washington University

ASYMMETRIC OBSERVATION ERRORS IN OPTIMAL CONTROL OF STOCHASTIC QUADRATIC LINEAR SYSTEMS AND APPLICATION TO MODELLING VOLATILITY
Rosario Romera and *Esther Ruiz* – Universidad Carlos III de Madrid

TREASURY BILL AUCTIONS IN SPAIN: AN OPTIMAL-CONTROL APPROACH
Francisco Alvarez, *Emilio Cerda*, and *Cristina Mazon* – Universidad Complutense de Madrid

BEYOND SERRANO VS. PRIEST: NATIONAL FUNDING OF EDUCATION
Jorge Soares – George Washington University

2.4 Innovation I

Room: Fulton 150
Chairperson: *G. R. Bassiry* – California State University, Santa Barbara

THE NEED FOR A NEW MICROECONOMIC PARADIGM
Alfred Norman, *Mridul Chowdhury*, and *Khurram Mahmood* – University of Texas, Austin

ORGANIZATIONAL STRUCTURE AND PERPETUAL INNOVATION: A COMPUTATIONAL MODEL OF A RETAIL CHAIN
Myong-Hun Chang – Cleveland State University and *Joseph Harrington, Jr.* – Johns Hopkins University

INSTITUTIONS AND INNOVATION DIFFUSION
Francesco Luna and *Andrea Zanatta* – University of Venice

EVOLUTION OF NETWORKS AND THE DIFFUSION OF NEW TECHNOLOGY
Glenn T. Mitchell – University of California, Santa Barbara

2.5 Nonlinear Dynamic Models: Alternative Solution Methods and Approximation Error

Room: Fulton 235
Organizer: *Volker Wieland* – Federal Reserve Board
Chairperson: *Baoline Chen* – University of Indiana

INACCURACY OF LOGLINEAR APPROXIMATION IN WELFARE CALCULATIONS: THE CASE OF INTERNATIONAL RISK SHARING
Jinill Kim – University of Virginia and *Sunghyun Henry Kim* – Brandeis University

INACCURACY OF LOGLINEARIZATION IN WELFARE CALCULATIONS: COMPLETE VS. INCOMPLETE MARKET ECONOMIES
Jinill Kim – University of Virginia, *Sunghyun Henry Kim* – Brandeis University, and *Andrew Levin* – Federal Reserve Board

DETERMINING SHORT-RUN ADJUSTMENTS: SENSITIVITY TO NON-LINEARITIES IN A REPRESENTATIVE AGENT FRAMEWORK
Peter J. Stemp – University of Melbourne and *Ric D. Herbert* – University of Western Sydney

IMPLICIT PROGRAMMING AND THE STABLE MANIFOLD FOR OPTIMAL GROWTH PROBLEMS
Baoline Chen – University of Indiana and *Robert A. Becker* – Indiana University

3.1 Financial and Econometric Analysis of Time Series

Room: Fulton 115
Organizer: *Jurgen A. Doornik* – Nuffield College, Oxford
Chairperson: *Hans-Martin Krolzig* – University of Oxford

FAST ESTIMATION OF PARAMETERS IN STATE SPACE MODELS
Siem Jan Koopman – CentER, Tilburg

TIME-SERIES MODELLING OF DAILY TAX REVENUES
Marius Ooms, *Björn de Groot* – Erasmus University, Rotterdam, and *Siem Jan Koopman* – CentER, Tilburg

FORECASTING VOLATILITY UNDER MULTIVARIATE STOCHASTIC VOLATILITY MODEL VIA REPROJECTION
Pieter J. van der Sluis – Tilburg University and *George J. Jiang* – Groningen University

COMPUTER AUTOMATION OF GENERAL-TO-SPECIFIC MODEL SELECTION PROCEDURES
Hans-Martin Krolzig – University of Oxford and *David Hendry* – Nuffield College, Oxford

3.2 Environmental Economics

Room: Fulton 117
Organizer and Chairperson: *Christophe Deissenberg* – University of Aix-Marseille II

ACHIEVING DESIRED PERFORMANCE THROUGH CONSTRAINT: APPLICATION TO POLLUTION-PRODUCTION CYCLES
Christopher Pawlowski – University of California, Berkeley

KNOWLEDGE SPILLOVER, TRANSBOUNDARY POLLUTION, AND GROWTH
Süheyla Özyildirim and *Nedim M. Alemdar* – Bilkent University

THE INFLUENCE OF CLEAN UP CAPITAL SUBSIDIES IN ENVIRONMENTAL OPTIMAL CONTROL MODELS WITH COMPLEX DYNAMICS
Christophe Deissenberg – University of Aix-Marseille II and *Laurent Cellarier* – University of Nantes and USC

3.3 Algorithms I

Room: Fulton 145
Chairperson: *Peter A. Zadrozny* – Bureau of Labor Statistics

EXTENDING THE HIGH-LEVEL ARCHITECTURE PARADIGM TO ECONOMIC SIMULATION
James A. Calpin, *Marnie R. Salisbury*, *John A. Vitkevich, Jr.*, and *David Woodward* – MITRE Corporation

SWAPPING THE NESTED FIXED-POINT ALGORITHM: A CLASS OF ESTIMATORS FOR DISCRETE MARKOV DECISION MODELS
Victor Aguirregabiria – University of Chicago and *Pedro Mira* – CEMFI

A TECHNIQUE FOR SOLVING RATIONAL-EXPECTATIONS MODELS
Jean-Louis Brillet – INSEE

PERTURBATION SOLUTION OF NONLINEAR RATIONAL EXPECTATIONS MODELS
Peter A. Zadrozny – Bureau of Labor Statistics and *Baoline Chen* – Rutgers University

3.4 Evolutionary Computing

Room: Fulton 150
Organizer and Chairperson: *Han La Poutre* – CWI Amsterdam

GOVERNANCE AND MATCHING
Tomas Klos – University of Groningen

A PRISONER'S DILEMMA GAME CAUSES TECHNICAL TRADING
Shareen Joshi – Santa Fe Institute and Reed College, *Jeffrey Parker*, and *Mark Bedau* – Reed College

COMPETING R&D STRATEGIES IN AN EVOLUTIONARY INDUSTRY MODEL
Murat Yildizoglu – Louis Pasteur University

THE INFLUENCE OF EVOLUTIONARY SELECTION SCHEMES ON THE ITERATED PRISONER'S DILEMMA
David van Bragt, *Cees van Kemenade*, and *Han La Poutre* – CWI Amsterdam

3.5 Heterogeneity, Private Information and Financial Intermediation

Room: Fulton 235
Organizer and Chairperson: *Marcelo Bianconi* – Tufts University

ON GOVERNMENT CREDIT PROGRAMS
Marco Espinosa-Vega – Federal Reserve Bank of Atlanta, *Bruce D. Smith* – University of Texas, Austin, and *Chong K. Yip* – Chinese University of Hong Kong

DIVORCE AND SAVINGS
Carol Scotese Lehr – Virginia Commonwealth University

OPTIMAL MONETARY POLICY WITH HETEROGENEOUS AGENTS: IS THERE A CASE FOR INFLATION?
Theodore Palivos – Louisiana State University

HETEROGENEITY, EFFICIENCY, AND ASSET ALLOCATION WITH ENDOGENOUS LABOR SUPPLY: THE STATIC CASE
Marcelo Bianconi – Tufts University

5.1   Integrated Time Series Models I

Room: Fulton 115
Organizer and Chairperson: *Uwe Hassler* – Free University Berlin

SIZE DISTORTIONS OF TESTS OF THE NULL HYPOTHESIS OF STATIONARITY: EVIDENCE AND IMPLICATIONS FOR APPLIED WORK
Mehmet Caner – Bilkent University and *Lutz Kilian* – University of Michigan

S-ESTIMATION IN THE LINEAR REGRESSION MODEL WITH LONG-MEMORY ERROR TERMS
Philipp Sibbertsen – University of Dortmund

ASYMPTOTIC INFERENCE FOR NONSTATIONARY FRACTIONALLY INTEGRATED PROCESSES
Francesc Marmol and *Juan J. Dolado* – Universidad Carlos III

5.2   Internet Economics I - Usage of the Internet

Room: Fulton 117
Organizer: *Thorsten Wichmann* – Berlecon Research
Chairperson: *Mingzhi Li* – University of Texas at Austin

THE NATURE OF MARKETS IN THE WORLD WIDE WEB
Bernardo A. Huberman and *Lada A. Adamic* – Xerox PARC

RESTART STRATEGIES AND INTERNET CONGESTION
Bernardo A. Huberman and *Sebastian M. Maurer* – Xerox PARC

ESTIMATING INTERNET USERS' DEMAND CHARACTERISTICS
Mingzhi Li – University of Texas at Austin, *Alok Gupta* – University of Connecticut, *Boris Jukic* – George Mason University, *Dale O. Stahl*, and *Andrew B. Whinston* – University of Texas at Austin

5.3   Computational Econometrics and Statistics I

Room: Fulton 145
Organizer and Chairperson: *David A. Belsley* – Boston College

EFFICIENT MONTE CARLO LIKELIHOOD ANALYSIS OF PANEL DATA MODELS WITH UNOBSERVED HETEROGENEITY IN TIME AND ACROSS INDIVIDUAL UNITS
Jean-François Richard – University of Pittsburgh

CALCULATING THE DENSITY AND DISTRIBUTION FUNCTION OF A SINGLY AND DOUBLY NONCENTRAL F RANDOM VARIABLE
Marc Paolella – Christian Albrechts University and *Ronald W. Butler* – Colorado State University

MEDIAN UNBIASED FORECASTS FOR HIGHLY PERSISTENT AUTOREGRESSIVE PROCESSES
Nikolay Gospodinov – Boston College

5.4   Evolution of Trade and Social Networks in Agent-Based Economies

Room: Fulton 150
Organizer and Chairperson: *Leigh Tesfatsion* – Iowa State University

SECTOR-DRIVEN CO-EVOLUTION OF REGIONAL NETWORKS AND AGENT LOCATIONS
Catherine Dibble – University of California, Santa Barbara

BACKWASH AND SPREAD: EFFECTS OF TRADE NETWORKS IN A SPACE OF AGENTS WHO LEARN BY DOING
Roger A. McCain – Drexel University

MARKET POWER EFFECTS ON WORKER-EMPLOYER NETWORK FORMATION IN EVOLUTIONARY LABOR MARKETS WITH ADAPTIVE SEARCH
Leigh Tesfatsion – Iowa State University

5.5   Evolutionary Computation I - Financial Engineering

Room: Fulton 235
Organizers: *Shu-Heng Chen* and *Chia-Hsuan Yeh* – National Chengchi University
Chairperson: *Chun-Feng Lu* – Masterlink Securities Corporation

THE ROLE OF AUTOMATED SEMIOTIC CLASSIFICATIONS IN ECONOMIC DOMAINS
Ana Marostica – University of Buenos Aires and *Fernando Tohme* – Universidad Nacional del Sur

GENETIC ALGORITHMS AND TRADING STRATEGIES: NEW EVIDENCES FROM FINANCIALLY INTERESTING TIME SERIES
Chueh-Inong Taso – National Chengchi University

WOULD EVOLUTIONARY COMPUTATION HELP FOR DESIGNS OF ARTIFICIAL NEURAL NETS IN FINANCIAL APPLICATIONS?
Chun-Feng Lu – Masterlink Securities Corporation

6.1   Evolutionary Computation II - Agent-Based Modelling of Financial Markets

Room: Fulton 115
Organizers: *Shu-Heng Chen* and *Chia-Hsuan Yeh* – National Chengchi University
Chairperson: *Shu-Heng Chen* – National Chengchi University

EVOLUTIONARY MODEL OF THE EXCHANGE RATE BEHAVIOR
Jasmina Arifovic – Simon Fraser University

HETEROGENEOUS BELIEFS, INTELLIGENT AGENTS, AND ALLOCATIVE EFFICIENCY IN AN ARTIFICIAL STOCK MARKET
Jing Yang – Concordia University

EVOLVING TRADERS AND THE FACULTY OF THE BUSINESS SCHOOL: A NEW ARCHITECTURE OF THE ARTIFICIAL STOCK MARKET
Shu-Heng Chen and *Chia-Hsuan Yeh* – National Chengchi University

6.2   Models with Explicit Expectations I

Room: Fulton 117
Organizers: *Michael Binder* – University of Maryland and *Peter Tinsley* – University of Cambridge
Chairperson: *Sean Holly* – University of Cambridge

ARE "DEEP" PARAMETERS STABLE? THE LUCAS CRITIQUE AS AN EMPIRICAL HYPOTHESIS
Jeff Fuhrer – Federal Reserve Bank of Boston and *Arturo Estrella* – Federal Reserve Bank of New York

AN EXAMINATION OF HOW MONETARY POLICY INFLUENCES FISCAL POLICY IN THE PRESENCE OF UNCERTAINTY
Doug Hostland and *Chris Matier* – Department of Finance, Canada

INSTRUMENT RULES, INFLATION FORECAST RULES AND OPTIMAL CONTROL RULES WHEN EXPECTATIONS ARE RATIONAL
Sean Holly – University of Cambridge and *Paul Turner* – University of Sheffield

6.3   Macroeconomic Policy, Uncertainty and Rational Expectations

Room: Fulton 145
Organizer: *Volker Wieland* – Federal Reserve Board
Chairperson: *Hans Amman* – University of Amsterdam

WHY IS THE FED SO RELUCTANT TO REACT?
Robert Tetlow and *Peter von zur Muehlen* – Federal Reserve Board

COULD THE FED HAVE IMPROVED PRICE STABILITY?
Walter K. Waymeyer –   and *Donald S. Allen* – Federal Reserve Bank of St. Louis

STOCHASTIC POLICY DESIGN FOR MODELS WITH RATIONAL EXPECTATIONS AND TIME-VARYING PARAMETERS
Hans Amman – University of Amsterdam and *David Kendrick* – University of Texas

6.4 Computational Econometrics and Statistics II

Room: Fulton 150
Organizer: *David A. Belsley* – Boston College
Chairperson: *Stephen G. Hall* – Imperial College Management School

REGIONAL VARIATIONS IN MEDIAN HOUSEHOLD INCOME: A NEURAL NETWORK APPROACH
J. H. Chesnut – United States Naval Academy

SPECIFICATION SEARCH AND STABILITY ANALYSIS
J. Guillermo Llorente and *J. del Hoyo* – Universidad Autónoma de Madrid

ON THE IDENTIFICATION OF COINTEGRATED SYSTEMS IN SMALL SAMPLES: PRACTICAL PROCEDURES WITH AN APPLICATION TO UK WAGES AND PRICES
Stephen G. Hall – Imperial College Management School, *Jennifer V. Greenslade* – Bank of England, and *S. G. Brian Henry* – London Business School

6.5 Agent-Based Models of Financial Markets

Room: Fulton 235
Organizer and Chairperson: *Andrew W. Lo* – Massachusetts Institute of Technology

MARKET FORCE, ECOLOGY, AND EVOLUTION
J. Doyne Farmer – Prediction Company

JUST ANOTHER DAY IN THE INTER-BANK FOREIGN EXCHANGE MARKET
Rajesh Chakrabarti – The Anderson School at UCLA

INFORMATION DISSEMINATION AND AGGREGATION IN ASSET MARKETS WITH SIMPLE INTELLIGENT TRADERS
Andrew Lo, Nicholas Chan – Massachusetts Institute of Technology, *Blake LeBaron* – Brandeis University, and *Tomaso Poggio* – Massachusetts Institute of Technology

7.1   Complex Dynamics, Structural Change, and Cycles

Room: Fulton 115
Organizers: *Emilio Barucci* – University of Florence and *Theo Eicher* – University of Washington in Seattle
Chairperson: *Carl Chiarella* – University of Technology, Sydney

NETWORK EXTERNALITIES AND THE PATH DEPENDENCE OF MARKETS: WILL BILL GATES MAKE IT?
Max Keilbach – ZEW and Technical University of Berlin

THE EVOLUTION OF TRADING RULES IN AN ARTIFICIAL STOCK MARKET
Mark Howard – University of Massachusetts

POPULATION DYNAMICS AND LABOUR FORCE PARTICIPATION WITHIN GOODWIN TYPE GROWTH-CYCLE MODELS
Piero Manfredi and *Luciano Fanti* – University of Pisa

APPLYING DISEQUILIBRIUM GROWTH THEORY: DEBT EFFECTS AND DEBT DEFLATION
Carl Chiarella – University of Technology, Sydney and *Peter Flaschel* – University of Bielefeld

7.2   Hysteresis in Models of Economic Analysis

Room: Fulton 117
Organizers: *Laura Piscitelli* and *A. J. Hughes Hallett* – University of Strathclyde
Chairperson: *A. J. Hughes Hallett* – University of Strathclyde

HYSTERESIS AND UNEMPLOYMENT: A PRELIMINARY INVESTIGATION
Rod Cross – University of Strathclyde, *Julia Darby* – University of Glasgow, *Jonathan Ireland*, and *Laura Piscitelli* – University of Strathclyde

MICRO AND MACRO HYSTERESIS IN EMPLOYMENT UNDER EXCHANGE RATE UNCERTAINTY
Matthias Göcke – University of Munster and *Ansgar Belke* – University of Bochum

HYSTERESIS IN ECONOMIC SYSTEMS
Rod Cross, *Michael Grinfeld*, and *Laura Piscitelli* – University of Strathclyde

7.3   Development

Room: Fulton 145
Chairperson: *Meral Karasulu* – International Monetary Fund and Bogaziçi University

A DYNAMIC STRUCTURAL ANALYSIS OF CONSUMER DEMAND FOR AUTOMOBILES IN SYDNEY, AUSTRALIA, 1981-1985
Michael Sandfort – Southern Methodist University

ECONOMIC REPERCUSSIONS OF ENVIRONMENTAL REGULATIONS IN POLAND: THE CASE OF THE SECOND SULFUR PROTOCOL
Olga Kiuila – Warsaw University

INEQUALITY AND THE GROWTH PROCESS: AN ESSAY ON DEVELOPMENT DYNAMICS
Aminur Rahman – University of Oxford

ASYMMETRIC SHOCKS AND LONG-RUN ECONOMIC PERFORMANCES ACROSS ITALIAN REGIONS
Rosella Giacometti – Università di Bergamo and *Dino Pinelli* – Fondazione ENI Enrico Mattei

7.4 Learning, Optimizing Behavior and Macroeconomic Dynamics

Room: Fulton 235
Organizers: *Emilio Barucci* − University of Florence and *Volker Wieland* − Federal Reserve Board
Chairperson: *Volker Wieland* − Federal Reserve Board

LEARNING AND THE LAW OF ITERATED PROJECTIONS
Bartholomew Moore − Fordham University and *Huntley Schaller* − Carleton University

THE DYNAMICS OF RATIONAL LEARNING PROCESSES WITH ASYMMETRIC INFORMATION
Maik Heinemann − Universität Hannover

LEARNING AND CONTROL: OPTIMAL DECISION-MAKING IN A CHANGING ECONOMIC ENVIRONMENT
Volker Wieland − Federal Reserve Board

8.1   Algorithms II
Room: Fulton 115
Chairperson: *Gary Anderson* – Board of Governors, Federal Reserve

DYNAMIC PROGRAMMING OVER A CONTINUOUS AND DISJOINT MULTIDIMENSIONAL SEARCH SPACE WITH AN INFINITE TIME HORIZON
Richard E. Hawkins, *Jack Dekkers*, and *James B. Kleibenstein* – Iowa State University

THE EL FAROL PROBLEM AND THE INTERNET: CONGESTION AND COORDINATION FAILURE
Ann M. Bell – Caelum Research and *William A. Sethares* – University of Wisconsin, Madison

COMPUTATION OF OPTIMAL GROWTH MODELS: EXPERIMENTS WITH OPTIMAL CONTROL ALGORITHMS AND COMPUTER PROGRAMS
Sardar M. N. Islam – Victoria University of Technology and *B. D. Craven* – University of Melbourne

GAINS FROM COMBINING THE ANDERSON-MOORE ALGORITHM AND JULLIARD'S STACK ALGORITHM
Gary Anderson – Board of Governors, Federal Reserve

8.2   Computational Econometrics and Statistics III
Room: Fulton 117
Organizer: *David A. Belsley* – Boston College
Chairperson: *Lynda Khalaf* – Université Laval

CHANGE OF MEASURE IN MONTE CARLO INTEGRATION VIA GIBBS SAMPLING WITH AN APPLICATION TO STOCHASTIC VOLATILITY MODELS
Filippo Altissimo – Bank of Italy

BAYESIAN ANALYSIS OF THE STOCHASTIC SWITCHING REGRESSION MODEL USING MARKOV CHAIN MONTE CARLO METHODS
Maria Odejar – Kansas State University

PARAMETER SENSISTIVITY AND ITS CYCLICAL CONSEQUENCES IN MACROECONOMETRIC MODELS
Ullrich Heilemann – Universität Duisburg and RWI, *Heinz Josef Münsch* – RWI, and *Michael B. E. Ackermann* – Universität Duisburg and RWI

SIMULATION BASED FINITE- AND LARGE-SAMPLE INFERENCE METHODS IN SIMULTANEOUS EQUATIONS
Jean-Marie Dufour – Université de Montréal and *Lynda Khalaf* – Université Laval

8.3   Software Environments for Bayesian Econometrics
Room: Fulton 145
Organizer and Chairperson: *John Geweke* – University of Minnesota and FRB

WINDOWS SOFTWARE FOR BAYESIAN MCMC COMPUTATIONS
Siddhartha Chib – Washington University

USING SIMULATION METHODS FOR BAYESIAN ECONOMETRIC MODELS
John Geweke – University of Minnesota and FRB

USING THE BACC SOFTWARE FOR BAYESIAN INFERENCE
William McCausland – University of Minnesota

BAYESIAN ANALYSIS OF ECONOMETRICS SYSTEMS WITH DISCRETE VARIABLES AND INEQUALITY CONSTRAINTS
Asli Ogunc, *Dek Terrell*, and *R. Carter Hill* – Louisiana State University

8.4 Models with Explicit Expectations II

Room: Fulton 150
Organizers: *Michael Binder* – University of Maryland and *Peter Tinsley* – University of Cambridge
Chairperson: *Sharon Kozicki* – Federal Reserve Bank of Kansas City

A SMALL MACRO MODEL OF THE AUSTRALIAN INFLATION PROCESS WITH ENDOGENOUS POLICY CREDIBILITY
Douglas Laxton and *Timothy Callen* – International Monetary Fund

INFLATION TARGETING: THE DELEGATION AND CO-ORDINATION OF MONETARY POLICY
S. G. Brian Henry – London Business School, *Stephen G. Hall* – Imperial College, and *James Nixon* – London Business School

IMPLICATIONS OF THE ZERO BOUND ON INTEREST RATES FOR THE DESIGN OF MONETARY POLICY RULES
David Reifschneider and *John C. Williams* – Board of Governors of the Federal Reserve System

PERMANENT AND TRANSITORY POLICY SHOCKS IN A VAR WITH ASYMMETRIC INFORMATION
Sharon Kozicki – Federal Reserve Bank of Kansas City and *Peter Tinsley* – University of Cambridge

8.5 Term-Structure Modeling

Room: Fulton 235
Chairperson: *Doug Rolph* – University of Washington

ROBUST ESTIMATION OF GARMA MODEL PARAMETERS AND APPLICATION TO COINTEGRATION AMONG INTEREST RATES OF INDUSTRIALIZED COUNTRIES
Raji Ramachandran and *Paul Beaumont* – Florida State University

TERM STRUCTURE ESTIMATION: AN IMPLIED NORM APPROACH NEGATIVE OPTION PRICES – A PUZZLE OR JUST NOISE?
Ioulia Ioffe – York University, *Alexandra E. MacKay* – University of Toronto, and *Eliezer Z. Prisman* – York University

FEDERAL FUNDS FUTURES, SPOT RATES, AND EXPECTED CHANGES IN MONETARY POLICY
Doug Rolph – University of Washington

9.1   Option Pricing
   Room: Fulton 115
   Chairperson: *Manfred Gilli* – University of Geneva

HEDGING OPTIONS UNDER TRANSACTION COSTS AND STOCHASTIC VOLATILITY
Roy Kouwenberg – Erasmus University Rotterdam, *Jacek Gondzio* – University of Edinburgh, and *Ton Vorst* – Erasmus University Rotterdam

STOCHASTIC VOLATILITY AND THE INFORMATIONAL CONTENT OF OPTION PRICES: EMPIRICAL ANALYSIS
Antonio Mele – THEMA and *Fabio Fornari* – Bank of Italy

DISCRETE-TIME CONTINUOUS-STATE INTEREST RATE MODELS
Michael Sullivan – Florida International University

NUMERICAL METHODS IN MULTIVARIATE OPTION PRICING
Manfred Gilli – University of Geneva, *Giorgio Pauletto* – Yale University and University of Geneva, *Philippe Huber*, *Evis Kellezi*, and *Matthias Kroedel* – University of Geneva

9.2   Models with Explicit Expectations III
   Room: Fulton 117
   Organizers: *Michael Binder* – University of Maryland and *Sharon Kozicki* – Federal Reserve Bank of
            Kansas City
   Chairperson: *Jang-Ting Guo* – University of California, Riverside

INVESTMENT UNDER UNCERTAINTY AND ECONOMIC GROWTH: A QUANTITATIVE INVESTIGATION
Michael Binder – University of Maryland

SUNSPOT FLUCTUATIONS: A WAY OUT OF A DEVELOPMENT TRAP?
Sergey Slobodyan – Washington University

BUSINESS CYCLES AND INTERDEPENDENT EXPECTATIONS
Burkhard Flieth – Max Planck Institute and *John Foster* – University of Queensland

CONSUMERS' SUNSPOTS, ANIMAL SPIRITS, AND ECONOMIC FLUCTUATIONS
Marcelle Chauvet and *Jang-Ting Guo* – University of California, Riverside

9.3   Algorithms III
   Room: Fulton 145
   Chairperson: *Mark Fisher* – Federal Reserve Bank of Atlanta

COMPUTATIONAL ALGORITHMS FOR VERTICAL COMPLEMENTARITY ARISING IN FINANCE
Berç Rustem, *Tetsuya Noguchi*, and *Michael Selby* – Imperial College

A NUMERICAL OPTIMIZATION ALGORITHM FOR IDENTIFICATION OF POLICY OPTIONS TO REHABILITATE A PUBLICLY MANAGED, PAY-AS-YOU-GO BASED PENSION SYSTEM
Serdar Sayan and *Arzdar Kiraci* – Bilkent University

EXTENDING THE COMPUTATIONAL HORIZON: EFFECTIVE DISTRIBUTED RESOURCE-BOUNDED COMPUTATION FOR INTRACTABLE PROBLEMS
Harry J. Paarsch and *Alberto M. Segre* – University of Iowa

CONSUMPTION AND ASSET PRICES WITH RECURSIVE PREFERENCES: CONTINUOUS-TIME APPROXIMATIONS TO DISCRETE-TIME MODELS
Mark Fisher – Federal Reserve Bank of Atlanta

9.4 Time Series Modeling of Interest Rates

Room: Fulton 150
Organizer: *Basma Bekdache* – Wayne State University
Chairperson: *Meral Karasulu* – International Monetary Fund and Bogaziçi University

THE APPLICATION OF THE KALMAN FILTER TO THE FISHER EQUATION: ITALIAN AND GERMAN TERM STRUCTURE OF INTEREST RATES
Claudia Panseri – Fondazione ENI Enrico Mattei, *Giovanni Urga*, and *Annalisa Cristini* – University of Bergamo

REAL INTEREST RATES AND REAL EXCHANGE RATES : EVIDENCE FROM INDEXED BONDS
Douglas Laxton – International Monetary Fund and *Michael Bleany* – University of Nottingham

LONG MEMORY CHARACTERISTICS OF THE DISTRIBUTION OF TREASURY SECURITY YIELDS, RETURNS, AND VOLATILITY
Robert A. Connolly – University of North Carolina and *Nuray Güner* – Middle East Technical University

THE FISHER EQUATION IN THE CONTEXT OF FRACTIONAL COINTEGRATION
Basma Bekdache – Wayne State University and *Christopher F. Baum* – Boston College

9.5 Financial Econometrics II

Room: Fulton 235
Chairperson: *Mark Kamstra* – Simon Fraser University

NONPARAMETRIC MODELING OF STOCK RETURNS CONSTRAINED BY A MODEL OF THE FINANCIAL-REAL INTERACTION
Peter Woehrmann and *Willi Semmler* – University of Bielefeld

MODELING A TIME-VARYING ORDER STATISTIC
Simone Manganelli and *Robert F. Engle* – University of California, San Diego

MINIMUM-VARIANCE KERNELS AND ECONOMIC RISK PREMIA
Cesare Robotti and *Pierluigi Balduzzi* – Boston College

THE ACCURACY OF FUNDAMENTAL STOCK MARKET PRICE ESTIMATES AND A REFINEMENT TO THE DONALDSON-KAMSTRA FUNDAMENTAL ESTIMATE
Mark Kamstra – Simon Fraser University and *R. Glen Donaldson* – University of British Columbia

10.1   Evolutionary Computation III - Agent-Based Modelling of Games
   Room: Fulton 115
   Organizers: *Shu-Heng Chen* and *Chia-Hsuan Yeh* – National Chengchi University
   Chairperson: *Tzai-Der Wang* – University of Paisley

GENETIC ALGORITHMS AND ECONOMIC EVOLUTION
Thomas Riechmann – University of Hannover

SIMULATING THE ECOLOGY OF OLIGOPOLY GAMES WITH GENETIC ALGORITHMS
Chih-Chi Ni and *Shu-Heng Chen* – National Chengchi University

A COMPARISON OF AN OLIGOPOLY GAME AND THE N-PERSON ITERATED PRISONER'S DILEMMA
Tzai-Der Wang, Colin Fyfe, and *John Paul Marney* – University of Paisley

10.2   Internet Economics II - Electronic Commerce
   Room: Fulton 117
   Organizer: *Thorsten Wichmann* – Berlecon Research
   Chairperson: *Michael Smith* – Massachusetts Institute of Technology

BIDDING STRATEGIES IN INTERNET YANKEE AUCTIONS: THEORY AND EVIDENCE
Rafael Tenorio and *Robert F. Easley* – University of Notre Dame

FRICTIONLESS COMMERCE? A COMPARISON OF INTERNET AND CONVENTIONAL RETAILERS
Michael Smith and *Erik Brynjolfsson* – Massachusetts Institute of Technology

10.3   Genetic Algorithms
   Room: Fulton 145
   Chairperson: *John Duffy* – University of Pittsburgh

STATISTICAL EVALUATION OF GENETIC PROGRAMMING
M. A. Kaboudan – Penn State Lehigh Valley

MODELLING RULE- AND EXPERIENCE-BASED EXPECTATIONS USING NEURO-FUZZY-SYSTEMS
Stefan Kooths – Westfälische Wilhelms-Universität

USING SYMBOLIC REGRESSION TO INFER STRATEGIES FROM EXPERIMENTAL DATA
John Duffy and *Jim Warnick* – University of Pittsburgh

10.4   Neural Nets
   Room: Fulton 150
   Chairperson: *Thomas G. Wier* – Northeastern State University

ALPHA-STABLE CONSISTENT MODEL SPECIFICATION TESTS FOR HEAVY-TAILED NEURAL NETWORKS
ENVIRONMENTS
Jonathan Hill – University of Colorado

THE NONLINEAR INTRADAY PATTERN OF FUTURES MARKET EXCHANGE RATES: AN APPLICATION OF
NEURAL NETWORK MODELS
Tung Liu – Ball State University and *Chung-Ming Kuan* – National Taiwan University

NEURAL-NETWORK MODELING FOR LABOR-FORCE MIGRATION: A COMPETITIVE-LEARNING APPROACH
Thomas G. Wier and *Vir V. Phoha* – Northeastern State University

10.5 Models with Explicit Expectations IV

Room: Fulton 235
Organizers: *Michael Binder* – University of Maryland and *Sharon Kozicki* – Federal Reserve Bank of
        Kansas City
Chairperson: *John Landon-Lane* – The University of New South Wales

GAINS FROM EMPLOYING SPARSE MATRIX TECHNIQUES IN THE ANDERSON-MOORE ALGORITHM
Gary Anderson – Board of Governors of the Federal Reserve System

OPTIMAL HORIZONS FOR INFLATION TARGETING
Nicoletta Batini and *Edward Nelson* – Bank of England

EVALUATING REAL BUSINESS CYCLE MODELS: THE DATA TRANSFORMATION PROBLEM
John Landon-Lane – The University of New South Wales

11.1 Integrated Time Series Models II

Room: Fulton 115
Organizer and Chairperson: *Uwe Hassler* – Free University Berlin

THE EFFECT OF LINEAR TIME TRENDS ON SINGLE EQUATION COINTEGRATION TESTING
Uwe Hassler – Free University Berlin

COINTEGRATION MODELING OF EXPECTED EXCHANGE RATES
Robert A. Connolly and *Paisan Limratanamongkol* – University of North Carolina

STATISTICAL ANALYSIS OF COINTEGRATED VAR PROCESSES WITH MARKOVIAN REGIME SHIFTS
Hans-Martin Krolzig – University of Oxford

11.2 Economics and Effective Computability

Room: Fulton 117
Organizer and Chairperson: *Francesco Luna* – University of Venice

WHAT CAN ECONOMISTS COMPUTE?
Marcel K. Richter – University of Minnesota and *Kam-Chau Wong* – Chinese University of Hong Kong

COMPUTABILITY AND ROBUSTNESS OF EQUILIBRIUM IN FINITE GAMES
Kislaya Prasad – Florida State University

PRODUCTION FUNCTIONS WITH ENGINEERING CONSTRAINTS
Francesco Luna – University of Venice

11.3 Games II

Room: Fulton 145
Chairperson: *M. Utku Ünver* – University of Pittsburgh

DESIGNING A DECISION MAKING SYSTEM FOR A MARKET-SELECTION GAME
Hisao Ishibuchi, *Chi-Hyon Oh*, and *Tomoharu Nakashima* – Osaka Prefecture University

BACKWARD UNRAVELING OVER TIME: THE EVOLUTION OF STRATEGIC BEHAVIOR IN THE ENTRY-LEVEL BRITISH MEDICAL LABOR MARKETS
M. Utku Ünver – University of Pittsburgh

11.4 Computation, Dynamic Modelling and Complex Dynamics

Room: Fulton 150
Organizer and Chairperson: *Emilio Barucci* – University of Florence

ECONOMIC EVOLUTIONARY SELF-ORGANIZING SYSTEMS: AN EFFECTIVE CHARACTERIZATION OF ECONOMIC EVOLUTION
Fernando Tohme and *Silvia London* – Universidad Nacional del Sur

LIMITED COMPUTATIONAL ABILITY AND APPROXIMATION OF DYNAMICAL SYSTEMS
Domenico Colucci – University of Florence

ESTIMATING THE COMPLEXITY FUNCTION OF FINANCIAL TIME SERIES: AN ESTIMATION BASED ON PREDICTIVE STOCHASTIC COMPLEXITY
Ching-Wei Tan – National Chengchi University

11.5 Optimal Monetary Policy Design

Room: Fulton 235
Organizer: *Volker Wieland* – Federal Reserve Board
Chairperson: *Andrew Levin* – Federal Reserve Board

OPTIMAL MONETARY POLICY WITH STAGGERED WAGE AND PRICE CONTRACTS
Andrew Levin, *Christopher J. Erceg*, and *Dale W. Henderson* – Federal Reserve Board

REAL IMPLICATIONS OF THE ZERO BOUND ON NOMINAL INTEREST RATES
Alexander L. Wolman – Federal Reserve Bank of Richmond

THE PERFORMANCE OF FORWARD-LOOKING MONETARY POLICY RULES UNDER MODEL UNCERTAINTY
Volker Wieland, *Andrew Levin*, and *John C. Williams* – Federal Reserve Board

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12.1 Evolutionary Computation IV - Agent-Based Modelling of Markets

Room: Fulton 115
Organizers: *Shu-Heng Chen* and *Chia-Hsuan Yeh* – National Chengchi University
Chairperson: *Chia-Hsuan Yeh* – National Chengchi University

COOPERATIVE RELATIONSHIP RAISE GAME-MODEL EVOLUTIONARY AGENTS' TOTAL PROFIT
Cheng-Yuan Liou and *Kun-Ta Tsai* – National Taiwan University

EVOLVING STRATEGIC BEHAVIORS THROUGH COMPETITIVE INTERACTION IN THE LARGE
Kimitaka Uno and *Akira Namatame* – National Defense Academy

CO-EVOLUTION IN A COMPETITIVE MARKET
Masayuki Ishinishi and *Akira Namatame* – National Defense Academy

12.2 Dynamical Models of Creative Destruction

Room: Fulton 117
Organizers: *Pierre Malgrange* – CEPREMAP and *Raouf Boucekkine* – Universidad Carlos III
Chairperson: *Pierre Malgrange* – CEPREMAP

EVIDENCE AND THEORY ON ASYMMETRIES IN US AGGREGATE JOB FLOWS
Fabrice Collard – CEPREMAP, *Patrick Fève* – Nantes University and CEPREMAP, *François Langot* – University of Le Mans and CEPREMAP, and *Corrine Perraudin* – CEPREMAP

NUMERICAL ANALYSIS OF SOME INNOVATION-ADOPTION MODELS WITH STATE-DEPENDENT LAGS
E. Bengoechea – Universidad Carlos III de Madrid and *R. Boucekkine* – Universite Catholique de Louvain

12.3 Macro-Econometrics

Room: Fulton 145
Chairperson: *Peter Ireland* – Boston College

DYNAMICS OF OPEN ECONOMY MODELS: WHAT IS THE ROLE OF THE DISCOUNT FACTOR?
Sunghyun Henry Kim and *M. Ayhan Kose* – Brandeis University

WORLD REAL INTEREST RATES AND BUSINESS CYCLES IN OPEN ECONOMIES: A MULTIPLE SHOCK APPROACH
M. Ayhan Kose – Brandeis University, *Bill Blankenau* – University of Wisconsin-Whitewater, and *Kei-Mu Yi* – Federal Reserve Bank of New York

A METHOD FOR TAKING MODELS TO THE DATA
Peter Ireland – Boston College

12.4 Time Series

Room: Fulton 235
Chairperson: *Mark J. Jensen* – University of Missouri

TESTS OF EQUAL FORECAST ACCURACY AND ENCOMPASSING FOR NESTED MODELS
Todd E. Clark – Federal Reserve Bank of Kansas City and *Michael McCracken* – Louisiana State University

ESTIMATION AND COMPUTATION OF LONG-MEMORY CONTINUOUS-TIME MODELS
Esben P. Hoeg – Aarhus School of Business

AN APPROXIMATE WAVELET MLE OF SHORT- AND LONG-MEMORY PARAMETERS
Mark J. Jensen – University of Missouri

13.1   Evaluation of Software for Economists

Room: Fulton 115
Organizer and Chairperson: *Charles G. Renfro* – Alphametrics Corporation

VISUALISATION OF RISK MANAGEMENT FOR EDUCATIONAL PURPOSES
Carl Chiarella – University of Technology, Sydney, *Alex Beliak* – Systems Design Architect, and *Alexander Khomin* – University of Technology, Sydney

MODELLING PROGRAMMING LANGUAGES – APPROPRIATE TOOLS?
Ric D. Herbert – University of Western Sydney

WILKINSON'S TESTS AND ECONOMETRIC SOFTWARE
B. D. McCullough – Federal Communications Commission

THE EVALUATION OF ECONOMETRIC MODELING LANGUAGES: SYNTAX AND CONTENT
Charles G. Renfro – Alphametrics Corporation

13.2   Computational Econometrics and Statistics IV

Room: Fulton 117
Organizer: *David A. Belsley* – Boston College
Chairperson: *Erricos Kontoghiorghes* – University of Neuchatel

ENVIRONMENTS FOR GLOBAL OPTIMIZATION USING INTERVAL ARITHMETIC AND COMPUTATIONAL (AUTOMATIC) DIFFERENTIATION
Max E. Jerrell – Northern Arizona University

ESTIMATION OF SPATIAL PANEL-DATA MODELS USING A MINIMUM-DISTANCE ESTIMATOR
Theophile Azomahou – University Louis Pasteur

TWO-STEP ESTIMATION OF DISCRETE/CONTINUOUS ECONOMETRIC MODELS WITH INTERDEPENDENT MULTINOMIAL CHOICES
Denis Bolduc and *Dimitri Sanga* – Université Laval

UPDATING SURE MODELS
Erricos Kontoghiorghes – University of Neuchatel

13.3   Dimensionality

Room: Fulton 145
Chairperson: *Bill Goffe* – University of Southern Mississippi

A FORMALISM FOR THE DIMENSIONAL ANALYSIS OF TIME SERIES
Jose-Manuel Rey – Universidad Complutense de Madrid

HYBRID METHODS FOR CONTINUOUS SPACE DYNAMIC PROGRAMMING
Mario J. Miranda – The Ohio State University and *Paul L. Fackler* – North Carolina State University

ESTIMATING STATIONARY ARMA MODELS EFFICIENTLY
Romulo A. Chumacero – University of Chile

VISUALIZING MULTI-DIMENSIONAL FUNCTIONS IN ECONOMICS
Bill Goffe – University of Southern Mississippi

13.4 Financial Modeling

Room: Fulton 150
Chairperson: *Luis M. Viceira* − Harvard Business School

BORROWING CONSTRAINTS, PORTFOLIO CHOICE AND PRECAUTIONARY MOTIVES:THEORETICAL PREDICTIONS AND EMPIRICAL COMPLICATIONS
Michael Haliassos and *Christis Hassapis* − University of Cyprus

EVOLUTION AND TIME HORIZONS IN AN AGENT-BASED STOCK MARKET
Blake LeBaron − Brandeis University

CAUTION IN MACROECONOMIC POLICY: UNCERTAINTY AND THE RELATIVE INTENSITY OF POLICY
P. Ruben Mercado − Bryn Mawr College and *David Kendrick* − University of Texas

STOCK MARKET MEAN REVERSION AND THE OPTIMAL EQUITY ALLOCATION OF A LONG-LIVED INVESTOR
John Y. Campbell − Massachusetts Institute of Technology, *Joao Cocco, Francisco Gomes, Pascal Maenhout* − Harvard University, and *Luis M. Viceira* − Harvard Business School

13.5 Agent-Based Modeling

Room: Fulton 235
Chairperson: *Charlotte Bruun* − Aalborg University

BEYOND EXPERIMENTAL ECONOMICS: TRADING INSTITUTIONS AND MULTIAGENT SYSTEMS
Adolfo López Paredes and *Cesáreo Hernández Iglesias* − ETS Ingenieros Industriales

AGENT BASED CUSTOMER MODELLING
David Collings, A. A. Reeder, Iqbal Adjali, P. Crocker, and *M. H. Lyons* − BT Laboratories

SELLER AUTOMATA IN A MODEL OF EXCHANGE
Richard Stahnke − Columbia University

ENDOGENOUS GROWTH IN A SWARM ECONOMY: FIGHTING TIME, SPACE, AND COMPLEXITY
Charlotte Bruun − Aalborg University and *Francesco Luna* − University of Venice